

HIGH CAPACITY MULTIMEDIA MESSAGING EXCHANGES

FIELD OF THE INVENTION

This invention relates to telecommunications networks and in particular to multimedia messaging systems employed over communication networks in which the multimedia messaging systems are clustered for higher capacity.

BACKGROUND OF THE INVENTION

Multimedia messaging systems are commercially available for such applications as voice mail and short message services over fixed telephone, radio telephone, paging and other types of communications networks. One such commercially available multimedia messaging system is the so-called MXE system manufactured by the present assignee. Throughout this specification, where reference is made to Ericsson's MXE system, that term shall mean either the commercially available Ericsson MXE system or such other multimedia messaging systems as may be available.

Traditionally, multimedia messaging systems are available with voice mail, fax mail, e-mail, notification services, short message services (alphanumeric messages displayed on mobile phones), and other customized services for the subscriber. The multimedia messaging system is the hardware and software that provides the infrastructure for these messaging applications across all types of telecommunications networks, such as fixed, cellular, private, paging, personal communication services (PCS), etc.

Multimedia messaging systems communicate with the network via multimedia interfaces (MMIs). An example multimedia interface (MMI) supporting present messaging applications for multimedia messaging systems is disclosed, for example, in Hulen et al., U.S. Pat. No. 5,497,373, which is incorporated herein by reference.

The MXE, like other multimedia messaging systems, supports a limited number of subscribers. This is due to at least three inherent bottlenecks in the system, namely the DMA transfers (i.e., the playing of voice prompts and the recording of voice messages), the ability to keep up with a remote telephony subsystem, and the disk access (such as subscriber lookups and message storage/retrieval). These bottle-necks are in fact the normal types of bottlenecks that you would expect to see on a system of this type, for example, on a system built around a single off-the-shelf UNIX workstation.

The multimedia messaging system, from the subscribers' view, provides personalized communications available in a variety of different formats to permit the subscriber to access messages in a variety of different ways. For example, when subscriber may otherwise be out of reach of traditional telephone systems, using the multimedia messaging system, others can leave voice messages, send faxes, or send e-mail to the subscriber via the multimedia messaging system which automatically notifies the subscriber that messages are waiting. When it is convenient, the subscribers then call a single number to retrieve all of the messages.

From the network perspective, the multimedia messaging system provides integrated messaging services to market to the subscribers, provides a single platform for developing additional services to provide to the subscribers, and enhances revenue streams by increasing call completion ratios.

Demand for multimedia messaging systems services is increasing, causing the bottlenecks inherent in multimedia

messaging systems to become increasingly significant. It therefore becomes necessary to add additional multimedia messaging systems to existing ones. This is traditionally done by adding systems containing sophisticated signaling interfaces to the telecom environment. One such example system is the so-called "LNX" manufactured by Excel, Inc. of Massachusetts. The LNX is a physical box having ports and a cage of circuit boards providing the interfacing to the telecom environment through an additional controller software module (sometimes referred to as an "LNX controller"). In this disclosure, the terms "LNX" and "LNX Controller" should be interpreted to broadly refer to sophisticated interfacing equipment whether marketed under the "LNX" name or not. In any event, expanding system capacity by adding new LNX boxes can be rather expensive and inefficient.

It thus becomes important to be able to add capacity to an existing multimedia messaging system, without the expense of additional telephony-equipped workstations.

SUMMARY OF THE INVENTION

By providing the ability to configure the multimedia messaging systems, it becomes possible to cluster the multimedia messaging systems in order to increase capacity of the system as a whole, without incurring the expense of adding telephony-equipped workstations. An example clustered system configuration consists of a single front-end machine which is "telephony-equipped" together with any number of back-end machines that do not have the otherwise necessary telephony switching equipment. Additional front-end machines are optional and can be effectively employed in accordance with the present invention to increase capacity still further, as described in greater detail below. The practical limit on the number of back-end machines would be based simply on the processing capabilities of the front-end machine, which can vary. In a preferred example, described below, three back-end machines communicate with one front-end machine.

The present invention provides a number of outstanding merits. First, the clustering arrangements (including the multiple clustering arrangement) provide nearly unlimited capacity for the multimedia messaging system. In addition, the separation of the real telephony-equipment (i.e., the controlling of the remote subsystem) from the messaging applications, results in a simplified system that becomes easier to support and upgrade. Still further, the present invention offers the customer the ability to expand their system capacity on an as-needed basis and with minimal risk. The present configuration also provides an environment which can be used for cost effective testing. The present invention further provides the possibility of networks of multi-vendor messaging systems having a common access number. Thus, the multimedia service referred to by the present invention can be any messaging service from simple voice mail applications to high band width applications, such as video-on-demand.

BRIEF DESCRIPTION OF THE DRAWINGS

Other advantages and objects of the present invention will be described in detail with reference to the accompanying drawings, in which:

FIG. 1 is a schematic diagram of an example embodiment of the present invention;

FIG. 2 is a schematic block diagram of an example front-end in accordance with the present invention;

FIG. 3 is an alternative example embodiment of the present invention showing a circuit switch access to other clusters;